A Parent’s Guide to 5th Grade Mathematics
Dear Parents,

This guide is intended to better acquaint you with the Common Core Learning Standards for 5th Grade Mathematics. It has been compiled from several different sources.

Included in this guide you will find:

- an overview of the Common Core Learning Standards for 5th grade
- a glossary that explains many of the newer terms to which students are being exposed
- information from "A Parent's Backpack Guide to the Common Core" (from EngageNY.org)
- information from "Parent Roadmap: Supporting Your Child in Grade 5 Mathematics,"
- information on how you can help including ThinkCentral, i-Ready diagnostic and instruction, helping with homework and helpful websites to use at home

We will continue to update and revise these guides as we continue along our journey in the implementation of the Common Core. If you have any suggestions for things to include in this guide, please send an email to wmcquay@bhbl.org. I hope you find this guide helpful. Thank you!

The BHBL Mathematics Committee
The way we taught students in the past simply does not prepare them for the higher demands of college and careers today and in the future. Your school and schools throughout the country are working to improve teaching and learning to ensure that all children will graduate high school with the skills they need to be successful.

In mathematics, this means three major changes. Teachers will concentrate on teaching a more focused set of major math concepts and skills. This will allow students time to master important ideas and skills in a more organized way throughout the year and from one grade to the next. It will also call for teachers to use rich and challenging math content and to engage students in solving real-world problems in order to inspire greater interest in mathematics.

Taken from Parent Roadmap: Supporting Your Child in Grade Three Mathematics
An Overview of 5th Grade Math

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

1. Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)

2. Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

3. Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real world and mathematical problems.

Mathematical Practices

These eight practices are the goals of all math education K-12

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.
Big Ideas in Grade 5

Operations and Algebraic Thinking
- Write and interpret numerical expressions.
- Analyze patterns and relationships.

Number and Operations in Base Ten
- Understand the place value system.
- Perform operations with multi-digit whole numbers and with decimals to hundredths.

Number and Operations—Fractions
- Use equivalent fractions as a strategy to add and subtract fractions.
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Measurement and Data
- Convert like measurement units within a given measurement system.
- Represent and interpret data.
- Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Geometry
- Graph points on the coordinate plane to solve real-world and mathematical problems.
- Classify two-dimensional figures into categories based on their properties.

What is Changing in Mathematics Education

The information below was taken from the "Parent’s Backpack Guide to Common Core State Standards" found on engageny.org.

To improve student learning, the new Common Core State Standards are different from the old ones. These changes are called shifts. The chart below shows what is shifting, what you might see in your child’s backpack and what you can do to help your child. Again, if your child's assignments do not reflect the shifts, then talk to your child’s teacher.

<table>
<thead>
<tr>
<th>What’s Shifting?</th>
<th>What to Look for in the Backpack?</th>
<th>What Can You Do?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your child will <strong>work more deeply in fewer topics</strong>, which will ensure full understanding. (less is more)!</td>
<td>Look for assignments that require students to show their work and explain how they arrived at an answer.</td>
<td>Know what concepts are important for your kids based on their grade level and spend time working on those concepts.</td>
</tr>
<tr>
<td>Your child will <strong>keep building on learning year after year</strong>, starting with a strong foundation.</td>
<td>Look for assignments that build on one another. For example, students will focus on adding, subtracting, multiplying and dividing. Once these areas are mastered, they will focus on fractions. Building on that, they will then focus on Algebra. You should be able to see the progression in the topics they learn.</td>
<td>Be aware of what concepts your child struggled with last year and support your child in those challenge areas moving forward.</td>
</tr>
<tr>
<td>Your child will <strong>spend time practicing and memorizing math facts</strong>.</td>
<td>Look for assignments that ask your child to master math facts such as addition groupings up to 20 or multiplication tables.</td>
<td>Help your child know and memorize basic math facts. Ask your child to “do the math” that pops up in daily life.</td>
</tr>
<tr>
<td>Your kids will <strong>understand why the math works and be asked to talk about and prove their understanding</strong>.</td>
<td>Your children might have assignments that ask them to show or explain their mathematical thinking - to SAY why they think their answer is the right one.</td>
<td>Talk to your children about their math homework and ask them to teach you new concepts. Help them figure out ways to explain their thinking.</td>
</tr>
<tr>
<td>Your child will now be asked to <strong>use math in real-world situations</strong>.</td>
<td>Look for math assignments that are based on the real world. For instance, homework for 5th graders might include adding fractions as part of a dessert recipe or determining how much pizza friends ate based on fractions.</td>
<td>Provide time every day for your child to work on math at home.</td>
</tr>
</tbody>
</table>
In grade five, students will build their understanding of the place value system by working with decimals up to the hundredths place. Students will also add, subtract, and multiply fractions, including fractions with unlike denominators. They will continue to expand their geometry and measurement skills, learning the concept of volume and measuring the volume of a solid figure.

Here are just a few examples of how students will develop and use their understanding of place value in grade five.

<table>
<thead>
<tr>
<th>Grade Four Mathematics</th>
<th>Grade Five Mathematics</th>
<th>Grade Six Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Use place value understanding to round multi-digit whole numbers to any place</td>
<td>• Use place value understanding to round decimals to any place</td>
<td>• Understand that positive and negative numbers are used together to describe quantities having opposite directions or values</td>
</tr>
<tr>
<td>• Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right</td>
<td>• Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and ( \frac{1}{10} ) of what it represents in the place to its left</td>
<td>• Understand a rational number (fraction, decimal, and percent) as a point on the number line</td>
</tr>
<tr>
<td>• Compare two multi-digit numbers based on meanings of the digits in each place, using the symbols &gt; (more than), = (equal to), and &lt; (less than)</td>
<td>• Read, write, and compare decimals based on the meanings of the digits in the tenths, hundredths, and thousandths place</td>
<td>• Understand ordering and absolute value of rational numbers</td>
</tr>
</tbody>
</table>

Students use place value understanding to figure out that, based on where the digits are located within the number, 0.115 is less than 0.151.

Students recognize that a 5 in the thousandths place is only one tenth the value of a 5 in the hundredths place.
Partnering with your Child's Teacher
(taken from Parent Roadmap)

Don't be afraid to reach out to your child's teacher—you are an important part of your child's education. Ask to see a sample of your child's work or bring a sample with you. Ask the teacher questions like:

• Is my child at the level where he/she should be at this point of the school year?

• Where is my child excelling? How can I support this success?

• What do you think is giving my child the most trouble? How can I help my child improve in this area?

• What can I do to help my child with upcoming work?
How Parents Can Help – Resources To Use At Home

1. Connecting with Go Math and ThinkCentral.com

*Go Math* is both fast-moving and challenging. Your child is most likely working harder than ever before to be successful in math and to fully understand the concepts. It is essential that your child practices new skills on a daily basis (homework) and continually reviews skills previously taught. When your child needs help with a concept, a good place to start is to look at the first two pages of the day’s lesson in the student textbook (the lesson number corresponds with the lesson number on their homework pages). These first two pages will walk your child through the lesson and will show them what skills are expected to be learned during that lesson.

We would like to make you aware of some valuable resources that are available for your use through thinkcentral.com - the online component of our *Go Math* program. I know many of you are using the online version of the textbook (Student Edition) to help your child further his or her understanding. However, there are additional resources that you will find on thinkcentral.com that can be very helpful to your child and offer opportunities for further practice and review of new concepts as well as those learned previously. I hope you will encourage your child to use the resources on this website.

To access your account follow these steps:

1). Go to [www.thinkcentral.com](http://www.thinkcentral.com)

2). Click on the yellow "Mathematics" tab on the left

3). Click on the "GoMath" icon (third from the left in the top row)

4). Select the state, district, and school from the drop-down menus. Then enter your:

   username _______________________ and password _____________________

5). Click on "My Library" to access several resources, including:

   - **GO Math! Student Edition** (online version of textbook with audio reinforcement)
   - **GO Math! Standards Practice Book** (corresponds with the Student Edition lessons and is often used for homework - pages can be printed from here)
   - **Mega Math** (provides additional lesson practice with engaging game-based activities that include audio and animation)
   - **GoMath! Multimedia eGlossary k-6** (mathematical concepts are defined using audio, graphics, and animation)
   - **GoMath! Real World Videos** (engaging videos that show math in real-world situations)
   - **Math Concept Readers** (online texts that support math concepts)

   Note: May vary depending on the teacher
Student Edition:

- To access the student edition, click Flash eBook
- From the online Student Edition, you can search for specific lessons. The lesson number in the Student Edition matches the lesson number in the Practice Book (homework book). From the lesson page, you can find links to several resources that can help support your child develop conceptual understanding of the skills presented.

Enter lesson # in search box to find a particular lesson. You can also use the Table of Contents.

Destination Math
Additional opportunities for practice of new skills, presented in an engaging way. These activities are a bit more challenging and should be used if your child seems to understand the new concept.

Animated Math Models
Concepts are modeled and reinforced with audio and animation. Feedback is provided and there is opportunity for students to complete additional practice and take a quiz. Great tutorials!!

Click on the speaker icon to have the text read to your child.

iTools Intermediate
Use these interactive virtual manipulatives to enhance conceptual understanding
2. Connecting With i-Ready – Additional Practice to Reinforce What’s Learned in Class

i-Ready is an on-line tool that kids love. It gives teachers valuable information about your child’s math ability and fun, interactive practice for students to reinforce math skills. All your child needs is Internet access and their username and password provided by your child's teacher. Students will be using i-ready in school in addition to their work at home. See below for more information.

**i-Ready Diagnostic & Instruction: Parent Training Guide**

**What is i-Ready Diagnostic & Instruction?**

i-Ready Diagnostic & Instruction is an online, interactive learning environment designed to assess students and then provide individualized instruction based on each student's unique needs. The exciting format and engaging content, as well as the Study Buddies and other interesting, contemporary characters, draw in students right away. The i-Ready experience builds students’ investment in their learning by giving them real-time feedback on their progress in each skill. As students complete each assignment successfully, they earn credits that they can use to play games. i-Ready Diagnostic & Instruction also provides opportunities to learn both at school and at home.

**How can I help my child get the most out of i-Ready Diagnostic & Instruction?**

- Talk with your child about how practicing i-Ready Diagnostic & Instruction at home will help prepare for classwork. Also, explain that i-Ready Diagnostic & instruction will show teachers where your child is doing well and which topics need some more review.
- Encourage your child to use the tools provided during lessons (reference to objectives, key terms, etc.) and to use scrap paper for math computation.
- Help your child identify and become familiar with the different parts of the student home page (My Assignments, My Stuff, My Progress).
- To help your child get started, see How Does My Child Navigate i-Ready Diagnostic & Instruction? (p. 2).
- Have your child use the Student Instructions for Completing Online Lessons (p. 3).
- Encourage your child to take each lesson and question seriously. Emphasize “think before clicking,” because just clicking through will not give an accurate report of what your child knows and is able to do.
- Discuss your child’s results by looking together at the “My Progress” box.
- Contact your child’s teacher about how often your child should practice at home, or with any additional questions about i-Ready Diagnostic & Instruction.

For more information on i-Ready, go to www.i-Ready.com/Tour
Where can I go to see how my child is performing?
Log in with your child’s Username and Password, and view your child’s “My Progress” box. Click on “Detail” to see your child’s progress by each skill domain and standard.

How does my child navigate i-Ready Diagnostic & Instruction?

Hi, Jay.

My Start

- Start Lessons
- Start Extra Lessons

My Stuff

30 game credits left to spend.

Clicking on Detail will show student progress on each domain and standard.

Clicking on Summary shows the number of lessons passed and game credits earned.

Students will be prompted to go to next lesson assigned to them.

Students can choose background themes, Study Buddies, and play games with credits earned.

How does i-Ready Diagnostic & Instruction work with what my child is learning in the classroom?
i-Ready Diagnostic & Instruction is designed to complement what is being taught in the classroom. The lessons are assigned based on how your child performed in the Diagnostic test, which he/she must complete before starting work on the lessons. The lessons are presented in three parts: tutorial, guided practice, and graded activity. Your child will get relevant instruction with supportive feedback as he/she progresses through the lessons.
Student Instructions for Completing Online Lessons

1. Open an Internet browser (Internet Explorer, Firefox, or Safari).
2. Go to: login.i-Ready.com
3. Enter your Username and Password. If you do not have your Username and Password, ask your teacher.
4. Select your state and click Go!
5. Select either Reading or Math. Your teacher will tell you which one to start with.
6. Keep track of your progress using the tabs in the “My Progress” box.
7. Click on Start Lessons to begin next assigned lesson.
8. Earn credits to play games with every lesson you completed! Keep track of credits, select games, change Study Buddies, and change themes in the “My Stuff” box.
9. Have fun and do your best!
3. Helping Your Child with Homework

In helping children learn, one goal is to assist children in figuring out as much as they can for themselves (constructing meaning). You can help by asking questions that guide, without telling what to do.

Good questions and good listening will help children make sense of mathematics, build self-confidence, and encourage mathematical thinking and communication. A good question opens up a problem and supports different ways of thinking about it. Here are some questions you might try; notice that none of them can be answered with a simple "yes" or "no."

**Getting Started**
What do you need to find out?
What do you need to know?
How can you get that information?
Where can you begin?
What terms do you understand or not understand?
Have you solved similar problems that would help?
What similar examples can you find in your student textbook?

**While Working**
How can you organize the information?
Can you make a drawing (model) to explain your thinking?
Are there other possibilities?
What would happen if......?
Can you describe an approach (strategy) you can use to solve this?
What do you need to do next?
Do you see any patterns or relationships that will help solve this?
How does this relate to.....?
Can you make a prediction?
What did you.....?
What assumptions are you making?

**Reflecting about the solution**
How do you know your solution (conclusion) is reasonable?
How did you arrive at your answer?
How can you convince me your answer makes sense?
What did you try that did not work?
Has the question been answered?
Can your explanation be made clearer?

**Responding (helping your children clarify and extend their thinking)**
Tell me more about this.
Can you explain it in a different way?
Is there another possibility or strategy that would work?
Help me understand this part . . .
4. Helping Your Child Learn Basic Math Facts

Educational research clearly demonstrates that fluency with basic math facts is essential for success in mathematics instruction.

The experts agree that the ability to recall basic math facts fluently is necessary for students to attain higher-order math skills. If this fluent retrieval does not develop, then the development of higher-order mathematics skills - such as multiple-digit addition and subtraction, long division, and fractions - may be severely impaired. If a student constantly has to compute the answers to basic facts, less of that student’s thinking capacity can be devoted to higher-level concepts than a student who can effortlessly recall the answers to basic facts. (Whitehurst, 2003)

The following websites provide opportunities for improving fluency in basic facts. Some of these sites utilize game format, which can be motivating for many students. Please encourage your child to engage in deliberate, regular fact practice. This can include online activities, use of flashcards and even practicing fact recall during car trips and daily activities!

www.xtramath.org

http://www.funbrain.com/math/

http://www.oswego.org/ocsd-web/games/mathmagician/cathymath.html


http://www.playkidsgames.com/games/apples/savetheApples.htm

http://members.learningplanet.com/act/mayhem/free.asp

http://www.sheppardsoftware.com/mathgames/monkeydrive/monkymath.htm
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<th>Number and Operations in Base Ten</th>
<th>Number and Operations- Fractions</th>
<th>Measurement and Data</th>
<th>Geometry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand the place value system. place value, decimal, decimal point, patterns, multiply, divide, tenths, thousands, greater than, less than, equal to, ‹, ›, =, compare/comparison, round</td>
<td>Use equivalent fractions as a strategy to add and subtract fractions. fraction, equivalent, addition/ add, sum, subtraction/ subtract, difference, unlike denominator, numerator, benchmark fraction, estimate, reasonableness, mixed numbers</td>
<td>Convert like measurement units within a given measurement system. conversion/ convert, metric and customary measurement</td>
<td>Graph points on the coordinate plane to solve real-world and mathematical problems. coordinate system, coordinate plane, first quadrant, points, lines, axis/ axes, x-axis, y-axis, horizontal, vertical, intersection of lines, origin, ordered pairs, coordinates, x-coordinate, y-coordinate</td>
</tr>
<tr>
<td>Perform operations with multi-digit whole numbers and with decimals to hundredths. multiplication/ multiply, division/ division, decimal, decimal point, tenths, hundredths, products, quotients, dividends, divisor, rectangular arrays, area models, addition/ add, subtraction/ subtract, (properties)- rules about how numbers work, reasoning</td>
<td>Apply and extend previous understanding of multiplication and division to multiply and divide fractions. fraction, numerator, denominator, operations, multiplication/ multiply, division/ divide, mixed numbers, product, quotient, partition, equal parts, equivalent, factor, unit fraction, area, side lengths, fractional sides lengths, scaling, comparing</td>
<td>Present and interpret data. line plot, length, mass, liquid volume</td>
<td>Classify two-dimensional figures into categories based on their properties. attribute, category, subcategory, hierarchy, properties (attributes, features), defining characteristics and non-defining characteristic, two dimensional</td>
</tr>
<tr>
<td>From previous grades:</td>
<td>Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. measurement, attribute, volume, solid figure, right rectangular prism, unit, unit cube, gap, overlap, cubic units (cubic cm, cubic in, cubic ft. nonstandard cubic units), multiplication, addition, edge lengths, height, area of base</td>
<td>From previous grades: relative size, liquid volume, mass, length, kilometer (km), meter (m), centimeter (cm), kilogram (kg), gram (g), liter (L), milliliter (mL), inch (in), foot (ft), yard (yd), mile (mi), ounce (oz), pound (lb), cup (c), pint (pt), quart (qt), gallon (gal), hour, minute, second, a.m., p.m., clockwise, counter clockwise</td>
<td>From previous grades: polygon, rhombus/ rhombi, rectangle, square, triangle, quadrilateral, pentagon, hexagon, cube, trapezoid, half/quarter circle, circle</td>
</tr>
<tr>
<td></td>
<td>Acute angle</td>
<td>An angle whose measure is less than 90°. [repeated from 3rd grade]</td>
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<td>---</td>
<td>-------------</td>
<td>---------------------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| 2 | Base (numeration) | 1. When a number is raised to a power, the number that is used as a factor is the base. Example: In $3^5$, 3 is the base.  
2. A face of a three-dimensional polyhedron by which the figure is measured or classified. [repeated from 4th grade]  
3. When working with cylinders or cones, base refers to one of the circles on which the cylinder or cone can stand. [repeated from 4th grade] |
| 3 | Cancel | When the numerator and denominator of a fraction have a common factor, this factor equals one and can thus be factored out of both the numerator and denominator. This process is often referred to as "canceling", although a more transparent phrase might be "factoring out 1".  
Example: $\frac{6 \cdot 5}{7} = \frac{6 \cdot \cancel{5}}{\cancel{7}} = \frac{6}{7}$ or $\frac{6}{7} \cdot \frac{\cancel{5}}{\cancel{7}}$  
(Note to teachers - because students will be learning the "cross-multiply" algorithm in the next year or so, it is better to not refer to this as "cross-cancel". The two terms are easily confused by students, and their actions are also confused.) |
| 4 | Coordinate | A number that determines the position of a point in one direction on a grid.  
Example: For the point (3, 5), 3 is the x-coordinate and 5 is the y-coordinate. |
| 5 | Coordinate plane | A plane formed by the intersection of a horizontal number line called the x-axis and a vertical number line called the y-axis. |
| 6 | Degree | 1) A unit for measuring angles. [repeated from 3rd grade]  
2) A unit for measuring temperature. [repeated from 3rd grade] |
| 7 | Distributive property of multiplication over addition | A property of real numbers stating that $a \cdot (b+c) = (a \cdot b) + (a \cdot c)$  
Example: $3 \cdot (40 + 5) = (3 \cdot 40) + (3 \cdot 5)$ |
| 8 | Equivalent | Representing the same number or amount.  
Example: $\frac{3}{4}$ and $\frac{6}{8}$ are equivalent fractions.  
Example: $2n + 3n$ and $5n$ are equivalent expressions. |
| 9 | Evaluate | To find the value of a numerical or algebraic expression. |

### Evaluate

<table>
<thead>
<tr>
<th>Evaluate</th>
<th>Numeric</th>
<th>Algebraic</th>
</tr>
</thead>
</table>
| Simplify | $3 \cdot 4 + 7$ = $14$ | $3x + 5$ when $x = 7$  
$3 \cdot 7 + 5$  
$26$ |
| Solve | $3 \cdot 4 + 7 = 14$  
(Note - by 6th or 7th grade, this use of "solve" will no longer be used.) | $3x + 2 = 14$  
x = $4$ |
10. Even number

Any integer that can be divided exactly by 2.
Example: -24, 0, 6 and 138 are all even numbers.

(Note to teachers – this is an expanded definition of that presented in 2nd grade. The 2nd grade definition works well when thinking about positive even numbers, but does not extend well to negative even numbers.)

11. Exponent

A numeral written above and to the right of another numeral to indicate how many times the original number is used as a factor.
Example: The exponent "3" in 4³ means 4 is a factor 3 times, 4 x 4 x 4.

12. Fraction

1. Part of a group or whole: A way of representing a part of a whole or part of a group by telling the number of equal parts in the whole and the number of those parts you are describing; it is written in the form \( \frac{\text{numerator}}{\text{denominator}} \), where the denominator represents the number of equal parts in the whole or group, and the numerator represents the number of parts you are describing.
2. Fair share: A number written with the numerator telling you how many wholes are being shared, and the denominator telling how many ways the wholes are being equally shared. Example: If 3 people are fair sharing 2 sandwiches, each person will get \( \frac{2}{3} \) of a sandwich.
3. A number expressed as a quotient, in which a numerator is divided by a denominator. [Expanded from 2nd grade definition]

13. Function

A relation in which every input (domain) value is paired with exactly one output (range) value. Functions can be represented in many different ways, including ordered pairs, tables, graphs, equations, and words.

14. Greatest common factor (closely related to greatest common denominator)

The largest factor of two or more numbers.
Example: to find the greatest common factor of 24 and 36
factors of 24: 5 {1, 2, 3, 4, 6, 8, 12, 24}
factors of 36: 5 {1, 2, 3, 4, 6, 9, 12, 18, 36}
common factors of 24 and 36 are {1, 2, 3, 4, 6, 12}, the largest being 12
12 is the greatest common factor of 24 and 36

(Note to teachers – please be sure to use the complete phrase, rather than the abbreviation (GCF), until you are sure your students are confident with this concept and phrase.)

For 12/22.3 and 30/23.5:

<table>
<thead>
<tr>
<th>Factor</th>
<th>Multiple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Least common</td>
<td>22 22.5 = 60</td>
</tr>
<tr>
<td>Greatest common</td>
<td>2 3 = 6</td>
</tr>
</tbody>
</table>
15 Improper (common) fraction
A fraction whose numerator is greater than or equal to the denominator.
Example: \( \frac{4}{3} \)
(Note to teachers - please have students leave at least some of their fractions in this form; in pre-algebra and beyond, mixed number answers are discouraged, except for some word problem situations.)

16 Integers (+/-)
The counting numbers (1, 2, 3,...), their opposites (-1, -2, -3,...), and zero

17 Least common multiple (closely related to least common denominator)
The smallest number, besides zero, that is a multiple of a set of two or more numbers.
(Note to teachers – please be sure to use the complete phrase, rather than the abbreviation (LCM or LCD), until you are sure your students are confident with this concept and phrase.)

For \(12=2\cdot2\cdot3\) and \(30=2\cdot3\cdot5\)

<table>
<thead>
<tr>
<th>Least common factor</th>
<th>Multiple</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(2\cdot3\cdot5 = 60)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Greatest common factor</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(2\cdot3\cdot6)</td>
<td></td>
</tr>
<tr>
<td>(12\cdot2\cdot3)</td>
<td></td>
</tr>
<tr>
<td>(30\cdot2\cdot3)</td>
<td></td>
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</tbody>
</table>

Example: to find the least common multiple of 4 and 12
multiples of 4 = \(\{0, 4, 8, 12, 16,...\}\)
multiples of 12 = \(\{0, 12, 24, 36,...\}\)
The lowest common number besides 0 in both sets is 12, so the LCM of 4 and 12 is 12.

Note to teachers - in addition to teaching students the listing strategy shown above, be sure they are also confident using the prime factorization strategy shown in the table above. This is an extremely important understanding/skill for algebra.

18 Mean (average)
The mean is the size of each of \(n\) equal groups made from \(n\) data values. The mean can be found by adding the values in a set of data and dividing by the number of such values.

For the data values of 8, 12, 7, 9, 3, 0, 3

<table>
<thead>
<tr>
<th>Mean</th>
<th>(\frac{8+12+7+9+3+0+3}{7} = 6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>0, 3, 3, 7, 8, 9, 12 (the middle value is 7)</td>
</tr>
<tr>
<td>Mode</td>
<td>3 (the most often occurring value is 3)</td>
</tr>
<tr>
<td>Range</td>
<td>12 - 0 = 12 (the difference between the smallest and largest data values)</td>
</tr>
</tbody>
</table>

19 Mixed number
A number represented by a whole number and a fraction.

20 Obtuse angle
An angle greater than a right angle (90°) and less than a straight angle (180°).

21 Odd number
Any integer that cannot be divided exactly by 2.
Example: 9, 1, -7, and -245 are odd numbers.
(Note to teachers – this is an expanded definition of that presented in 2nd grade. The 2nd grade definition works well when thinking about positive odd numbers, but does not extend well to negative odd numbers.)
22 Ordered pair
A pair of numbers that shows the position of a point on a coordinate grid.
Example: (3, 5)

23 Order of operations
A set of rules that states the order in which operations should be done.
1. Compute inside parentheses and other grouping symbols first.
2. Simplify all exponents
3. Multiply and divide from left to right.
4. Add and subtract from left to right.

24 Origin
The point (0,0) on a two-dimensional coordinate grid.

25 Parallelogram
A quadrilateral with both pairs of opposite sides parallel.

26 Prime factorization
A number written as the product of its prime factors.
Example: 24 = 2\cdot 2\cdot 3

27 Prime number
A number greater than 1 that has exactly two different factors (1 and itself).
Examples of prime numbers are 2, 7, and 13. The only factor pair of 7 is 1 and 7.
Important Note – 1 is **not** a prime number.

28 Quadrant
1. Any quarter of a plane divided by an x and y axis.
2. A quarter of a circle or of the circumference of a circle.

29 Quadrilateral
A two-dimensional polygon with four sides.

30 Rectangle
A parallelogram with four right angles.

31 Simplify
1. To rewrite a fraction as an equivalent fraction with a smaller numerator and denominator.
2. To rewrite a numeric or algebraic expression with an equivalent expression that is simpler than the original. This usually means that the simplified expression is smaller than the original.

<table>
<thead>
<tr>
<th>Evaluate</th>
<th>Numeric</th>
<th>Algebraic</th>
</tr>
</thead>
<tbody>
<tr>
<td>3\times 5, when x=7</td>
<td>3\times 5 + 5</td>
<td>3\times 5 + 5</td>
</tr>
<tr>
<td>\frac{15}{5}</td>
<td>\frac{15}{5}</td>
<td>\frac{15}{5}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Simplify</th>
<th>\frac{3\times 4 + 7}{14}</th>
<th>\frac{3\times 1 + 2\times 5}{5x + 6}</th>
</tr>
</thead>
<tbody>
<tr>
<td>\frac{5}{15}</td>
<td>\frac{5}{15}</td>
<td>\frac{5}{15}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solve</th>
<th>3\times 4 + 7 = 14</th>
<th>\frac{3\times 2 = 14}{x}</th>
</tr>
</thead>
<tbody>
<tr>
<td>\frac{3\times 2}{\text{no longer be used}}</td>
<td>\frac{3\times 2}{x = 4}</td>
<td></td>
</tr>
</tbody>
</table>
### 33 Square Number (also Perfect Square)

The product of a whole number and itself. Example: 16 is a perfect square because it is 4 \times 4

<table>
<thead>
<tr>
<th><strong>Square (noun)</strong></th>
<th>A rectangle with four equal sides.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Square (verb)</strong></td>
<td>To multiply a number by itself.</td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td>Square 3 → (3 \times 3 = 9)</td>
</tr>
<tr>
<td></td>
<td>Square (x) (\times ) ((x + 1)^2 = x^2 + 2x + 1)</td>
</tr>
<tr>
<td><strong>Square Number</strong></td>
<td>The product of a whole number and itself.</td>
</tr>
<tr>
<td><strong>Perfect Square</strong></td>
<td>16 is a perfect square because it is 4 \times 4</td>
</tr>
<tr>
<td><strong>Square Root</strong></td>
<td>The square root of a number is that special value that, when multiplied by itself, gives the number.</td>
</tr>
<tr>
<td></td>
<td>(\sqrt{4} = 2), so the square root of 16 is 4</td>
</tr>
<tr>
<td></td>
<td>The symbol is (\sqrt{})</td>
</tr>
<tr>
<td></td>
<td>(\sqrt{25} = 5) (because 5 \times 5 = 25)</td>
</tr>
</tbody>
</table>

### 34 Surface area

The total area of the two-dimensional surfaces around the outside of a three-dimensional figure.

### 35 Triangle

A polygon with three sides.

### 36 Unit (of measurement)

A quantity used as a standard of measurement. Example: Units of time are second, minute, hour, day, week, month, year and decade.

<table>
<thead>
<tr>
<th><strong>Unit of measurement</strong></th>
<th>A quantity used as a standard of measurement.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit fraction</strong></td>
<td>A fraction that is one equal part of a whole ((\frac{1}{2})).</td>
</tr>
<tr>
<td><strong>Units</strong></td>
<td>How many ones; how many single items.</td>
</tr>
</tbody>
</table>

### 37 Variable

A letter or symbol that represents a number.

### 38 Volume

The measure of the amount of space occupied by a 3-dimensional object.

### 39 \(x\)-axis

The horizontal axis of a two-dimensional coordinate grid.

### 40 \(y\)-axis

The vertical axis of a two-dimensional coordinate grid.
Websites for 5th Graders

http://www.xtramath.org
http://www.multiplication.com/games
http://www.ictgames.com/
http://www.eduplace.com/math/mthexp
http://www.aplusmath.com/
http://www.aaamath.com/
http://mathforum.org/dr.math/
http://www.coolmath4kids.com/
http://www.funbrain.com/
http://www.mathstories.com/
http://www.teachrkids.com/
http://www.mathplayground.com/wordproblems.html

Websites for Parents

http://www.engageny.org
illuminations.nctm.org
www.kahnacademy.org
www.pbs.org/parents/earlymath/
www.pta.org/files/4th%20Grade_B-W.pdf

More Common Core Websites


HOT This PDF files provides the standards for all grade levels. It can be a helpful tool to gauge what concepts are new for students and which are being reviewed.

file://localhost/Users/ahaluska/Downloads/grade_5_math_released_questions (1).pdf

This PDF file contains past testing questions that were released to the public. Each question is examined and correct solutions are provided.
This is the official website of New York State. It provides some excellent articles, videos and suggestions to help your children be successful.


HOT Even though this is a North Carolina Website, the standards remain the same. There are excellent examples for each standards. This site takes you step by step to solve each problem.

http://www.rcs.k12.ny.us/parents.cfm?subpage=1814491

HOT This site offers homework help for each standard related to the common core. Many of the links are videos that parents and children can watch for clarification.

https://www.youtube.com/playlist?list=PL22829C00A9DA9ECF

HOT Mr. Almeida offers many You Tube videos to help students understand important fifth grade math concepts.

https://learnzillion.com/search?query=&page=1&models%5B%5D=LessonSet&models%5B%5D=Resource

Learn Zillion is a good math site (you must register…free though) that offers lots of different videos, models, and tutorials that will help students review a concept.

http://www.commoncoreconversation.com/math-resources.html#sthash.vU82FXys.dpbs

This site is a wonderful resource (may be a bit overwhelming). It offers lots of additional sites to browse.


HOT This site offers information about bar modeling. This is a term that parents might not be familiar with, but is a great way of problem solving.


This website offers a PDF version of a parent guide created by The Council of Great City Schools. It does a nice job explaining the scaffolding from the previous grade level.

https://www.splashmath.com/math-vocabulary/fifth-grade

HOT This site offers an easy to navigate glossary of 5th grade math terms.
Resources used in this Publication

West Genesee CSD publication “A Parents Guide to Third Grade Mathematics”

EngageNY, www.engageny.org

New York State Education Department, Common Core Learning Standards for Mathematics, K-12


Whitehurst, G., IES Director’s presentation at the Mathematics Summit, Washington, D.C., 2003

Irvine Unified School District website, iusd.org